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Puzzles and Perspectives in Electronic Market Theory – Reflections on Adoption of a B2B Electronic Market in the Australian Beef Cattle Industry –

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Abstract

In recent years there has been a growing theoretical pluralism in electronic markets (EM) literature. On the one hand, this pluralism encourages the discovery of novel aspects of EMs, but on the other hand there is a danger of excessive theoretic "balkanisation" and it becomes easy to lose sight of the ways in which the various school of thoughts are related to each other. The problem is that different schools of thoughts tend to focus only single sides of the investigated phenomenon and are not on "speaking terms" because of their different logic and vocabularies. The purpose of this paper is to identify theoretic views in EM theory in order to classify the different schools of thoughts in EM theory and making their underlying assumptions explicit. The outcome of this research is a framework of perspectives in EM theory which can be helpful for both understanding as well changing the EM reality. Based on a detailed case study of an EM in the Australian beef market and a theoretical review of EM literature, this framework is developed. It distinguishes four views based on two analytical dimensions: (1) the relative emphasis on the deterministic versus the voluntaristic assumption about human behavior and (2) micro versus meso level analysis and the nature of change. These four views are: the coordination system view, the strategic choice view, the ecological natural selection view and network action view. This framework is used to explore and reflect on the striking, often contradicting findings of the case study.

Key words: *electronic markets (EM), interorganisational systems, views in electronic market theory.*

1. Introduction

1.1 Background

In the mid-1990s, emerging interactive IT capabilities, such as Internet and World Wide Web, created innovations in transaction patterns between companies and their partners in order to sustain new advantages in the so-called network economy (Castells, 1996). In general, the network economy can be characterized by a shift from vertical, hierarchical governance towards market oriented governance of transactions (Wigand et al., 1997). By consequence, a fundamental rethinking of business and their underlying business models is needed. Especially the shift towards electronic markets (EM) as an important co-ordination mechanism is a major topic in the IS field.

In a theoretical notion, markets are the composition of all factors determining the price of goods. In a concrete notion, market are social institutions that facilitate resource exchange between a group of buyers and sellers by solving problems of resource allocation (who gets what) and price determination (at what price) by means of competition (Koppius, 2002). Economists understand by the term market not any particular market space in which things are bought and sold, but the whole (physical or virtual) community in which buyers and sellers are in such a free intercourse with one another that prices of the same good tend to equality and quickly. The more nearly perfect a market is, the stronger is the tendency for the same price to be paid for the same thing at the same time in all the parts of the market (Marshall, 1961, 1920). Perfect markets assume perfect information, homogeneous goods and perfect competition. Perfect information means that all actors in the market automatically and costless have all the relevant information necessary to make their market decisions. This is one of the reasons, that there is in the last years an emphasis on IT innovations in markets. IT investments in interorganisational systems and electronic markets (EM) are enabling the relevant and necessary communication and information at lower cost and are therefore contributing too a more perfect market based co-ordination.

The proliferation of EM in the last five years has been rapid and extensive, although recent years a period of consolidation and contraction is taking place. The rapid emergence of this phenomenon has led to a range of EM notions highlighting different aspects like the IT infrastructure, application and data structure (IOS model; Bakos, 1991) the bundle of various trade processes which are supported by information (service process model; Kambil and Van Heck, 1998), arrangements for regulating the roles of the different market participants like sellers, buyers, intermediaries (governance and ownership model; Kaplan and Sawheny, 2000; Baldi and Borgman, 2001) , the service content and value proposition to targeted participants groups and the revenue and cost distribution over the participants (value proposition model ; questions of Slywotzky, 1997).

EM will be considered as institutions that facilitate transactions of resource exchange by offering a bundle of services supporting the various market trade processes, carried out or at least supported by utilising interorganisational systems. EM have been developed both vertically within individual industries fostering market-based exchanges between actors along the supply chain and horizontally across industry boundaries addressing a specific function (e.g.human resources, office supplies, financial logistics) serving a wide range of industries. The EM are transforming the way that firms interact with each other. There are developed many classifications of the phenomenon EM. The basic classification is business-to-business (B2B e.g. Covisint), business-to-consumer (B2C, e.g. electronic

grocery), consumer-to-consumer (C2C, e.g. eBay), business-to-government (B2G) and government-to-government (G2G). Our focus is B2B electronic marketplaces.

There can be identified different streams in EM research: (1) the first stream investigates what is the impact of IT on the choice between an electronic hierarchy versus electronic market (Malone, Yates and Benjamin, 1987; Benjamin and Wigand, 1995), (2) the second stream assumes that the choice for market-based coordination has been made and subsequently investigates the difference in outcome and performance between electronic and traditional markets (Bakos, 1997). (3) A third stream is looking at factors that drive and hinder the EM adoption (Kambil and van Heck, 1998) and (4) a stream looking at markets as a community (Steinfeld and Klein, 1999). To conclude, Koppius (2002, p 25) states "that the research field of EM is slowly maturing: whereas the first studies were largely conceptual and agenda-setting in nature, now empirical studies are becoming more common.... most studies identify new determinants of market processes, their outcome and success or show that context factors qualify existing relationships. This implies that not only further empirical studies are necessary to identify more such factors but also that theorizing become necessary to link these factors together and further mature the field". Christiaanse and Markus (2002) argue that the existing school of thoughts such as Transaction Cost Approach have major limitations in explaining adoption of EMs and propose a more integrative model synthesizing different schools of thoughts such as transaction cost economics, strategic networks theory, marketing channel theory and political economy.

1.2 Aim and Methodology Research

So, in recent years there has been a growing theoretical pluralism in EM literature, which reflects partly a growing awareness of the complexity of EM and partly a refinement of the interests and preoccupation of theorists. On the one hand, this theoretical pluralism encourages the discovery of novel aspects of EM, but on the other hand there is a danger of excessive theoretic "balkanization" and it becomes easy to lose sight of the ways in which the various school of thoughts are related to each other. The problem is that these school tends to focus only single sides of the investigated phenomenon and are not on "speaking terms" because of their different logic and vocabularies. The danger is that they are exposing or highlighting certain issues and at the same time hiding other (important) issues. Fundamentally, our freedom of changing reality depends on our freedom in perception and understanding of the (EM) reality. It is important for both understanding as well changing the EM reality that the (hidden) assumptions of schools of thoughts are made more explicit. Therefore, the objective of our research is:

What perspectives (views on EM reality) can be identified in EM theory to support researchers and practitioners in a better understanding of the EM practice?

The intended outcome is a classification of different school of thoughts in the EM field and their -often-implicit assumptions. This paper proceeds as follows. Section 1 introduces the subject, aim and structure of the paper. Section 2 presents some puzzles we identified in a case study. These puzzles can be considered as contradictions in explaining the adoption of EM. In section 3 is developed a framework of perspectives in EM theory classifying the major schools of thoughts. It is based on applying theoretical concepts and generalising case study findings. Section 4 is summarising the results of our research.

2. Puzzles in EM Practice of the Australian Beef Industry

The first and second paragraph of this section is based on general documentation and a detailed case study by a master student in a joint project of the Australian National University in Canberra and the University of Twente in Enschede, The Netherlands. The puzzles in the third paragraph are generalised from the case study findings (AMLC reports; Driedonks, C.F., 2003; Australian Bureau for Statistics, 2002).

2.1 Introduction Case Study Australian Beef Cattle Market

The Australian beef industry is a major contributor to incomes in rural Australia; the industry was valued at A\$ 6.4 billion, more than 19% of the Australian farm production value. Australia has approximately 76,000 cattle producing farms and over 650 accredited beef cattle feedlots. Cattle are slaughtered through some 236 processing plants in Australia with 170 of these plants processing specifically for the domestic market. Australia exported in 2001 69% of the beef production (Australian bureau for statistics, 2002). The case study is motivated by the relatively low rate of use of an EM in the beef cattle market of cattle producers (farmers) selling their cattle to meat processors using different exchanges methods. Several exchange methods exist in this market. The major exchange methods are the traditional saleyard auctions and the over-the-hooks method. The electronic marketplace is an alternative to these traditional methods. Adoption of AuctionsPlus, however, has not been as widespread as originally envisaged, even after a relatively long period of time. This case offers the opportunity to gain insights into the reasons behind the success or otherwise of B2B marketplaces.

AuctionsPlus is a computer-based auction system and claims to combine the advantages of the major traditional exchange methods. The Australian Meat and Livestock Cooperation (AMLC) launched this system under the name of Computer Aided Livestock Marketing (CALM) in 1987. CALM claimed to “provide a system for buying and selling cattle, sheep, lambs and pigs, on the basis of an objective description, while the stock remains on the property or feedlot. Buyers can bid from anywhere in Australia. CALM combines the advantages of auction selling with the efficiency of sale by description” Clarke, R., & Jenkins, M. (1993). In 1995 a major stock-agent company, WestFarmers Landmark, Eldrs and Rogers, took over CALM, centralised the organisation and changed its name to AuctionsPlus. Net results of AuctionsPlus are after 1995 not public, but it is said that AuctionsPlus’ net result at the year 2002 lies around zero.

It is remarkable that this marketplace has never really burgeoned in terms of adoption. The number of registrations has increased over the years, but the number of users is still not much higher than in 1988, when the system was just launched. The cattle producers and meat processors, who are potential users, have tended to continue with the major traditional methods for trading cattle - saleyard auctions and over-the-hooks. The saleyard auction is the most common method of exchanging “prime cattle” to the meat processors and “store cattle” to other cattle producers. Often agents are selling livestock on behalf of the producer for a commission. The strength of saleyards are that buyers can inspect their purchased cattle and that sellers are getting a higher price because a high competition between buyers bidding for lots of animals in an auction based system. The over the hook system is based on direct selling from the cattle producer too the meat processors, often based on long-term contracts and social contacts. It is not uncommon that the agent is involved in this system as an intermediary. The strengths of this system are that cattle producers can anticipate on special needs of the meat processors and they get paid for exactly what they deliver. Meat producers can buy cattle, which are fulfilling

their specific needs. The weakness is that there is no visible competition between meat processors.

2.2 Case Study Objective, Research Model, and Data Collection Method

The central objective of the case study, regarding the adoption of AuctionsPlus, a B2B electronic market in the Australian beef cattle market, is:

What are the economic and social factors that affect the rate of adoption (on an individual and stakeholders level) of the B2B electronic market AuctionsPlus as one of the exchange methods in the Australian beef cattle market?

The phenomenon is studied through the following theoretical lenses: Rogers's diffusion theory and Kambil and van Heck's process-stakeholders framework. The choice for these schools of thoughts represents a trade-off between the dual research goals to get insight in the rate of adoption on economic and social level. According to Rogers (1995) adopters can be characterized after their innovativeness determined by their individual information processing styles and by the use of communication channels. The adopters are acting independently of each other however they are "contaminated" by an increasing unlimited information flow. Rogers states that the rate of adoption of a innovation is influenced by: (1) perceived attributes of innovations (relative advantage, compatibility, complexity, trialability and observability); (2) type of adoption decision (individual, collective, autocratic or conditional decision making); (3) communication channels characteristics (high versus slow speed); (4) social system characteristics (norms, interconnections) and (5) extent of change agent's and especially opinion leaders promotion efforts.

Kambil and van Heck (1998) states in their economic oriented process-stakeholder framework that the adoption of IT innovations in electronic markets will not succeed if any key stakeholder in market organisations is worse off after the IT innovation. In order to measure the impact of IT based innovations on the purposes and interests of involved stakeholders, Kambil and van Heck (1998) developed a general model of exchange processes, distinguishing:

- Five basic trade processes required in all transactions of goods and services (search, valuation, logistics, payments and settlements and authentication) and
- Four trade context processes facilitating the basic trade processing and reducing costs or frictions in these processes by product representation, legitimization, influence, and dispute resolution.
- A core communication and computing process affect the basic trade- and trade context processes.

Different methods are used to collect the data. On stakeholder level, the unit of analysis is exchange methods and their outcomes for the key stakeholders groups (cattle producers and meat processors). On the individual level, the unit of analysis is individual potential users and their perception of AuctionsPlus. Data were collection by direct observations, interviews and analysis of documents. In total 23 people were interviewed: 10 cattle producers, two major meat processors, one stock & station agent's representative, one sale yard representative, two former AuctionPlus employees as experts and one government representative.

2.3 Conclusions: Puzzles in EM Practice

The striking findings of the above mentioned case study are summarised in puzzles, contradicting explanations of the EM adoption in the beef cattle market, indicating the differences in underlying views on what EM are and how adoption of EM happens in practice.

1. The core of an EM is an economical rational system and social community.

The case study shows that EM has a social community character what explains that the “slow” rate of adoption of AuctionsPlus was determined strongly by social factors such as trust and long term relations between cattle producers, meat processors and agents. Based on the process stakeholder framework there were net benefits for all the stakeholders in comparison with the traditional exchange methods, but these economic benefits were not decisive in the adoption.

2. EM adoption decisions by stakeholders and individual actors community

Strongly related with the first observation can be concluded that the adoption of the EM innovation of AuctionsPlus was more dominated by the social oriented individual choices of the involved community actors such as buyers, sellers then by the economic oriented strategic choices of involved key stakeholders. In spite of the fact that none of the involved stakeholders were worse off using AuctionsPlus, most individual potential users decided not to adopt. This “slow” adoption is explained by the nature of the social system and especially the traditional norms of the cattle producer, which was influencing their perception of the benefits of AuctionsPlus. In this respect, a difference has to be made between the autocratic adoption decision by key stakeholders, deciding on behalf of the group of buyers and sellers and the diffusion of the innovation by individual choices.

3. EM development by blueprinting engineering and path dependent evolution

The case study shows that EM development can be considered both as engineering of a neutral technical system to achieve predefined goals as well a path dependent, evolution as a manifestation of competition between existing vested interest and power structures in the beef cattle market. In 1987 AuctionsPlus was originally launched as a governmental agency with a predefined purpose. This strategic intent was not realised (they were suffering losses during the whole period) and AuctionPlus was bought in 1996 for a symbolic amount of money by an agent in the livestock industry, a powerful stakeholder with a vested interest in the beef cattle market.

4. EM advantages by lower transaction cost and integrating benefits.

Another observation of the case study was that the exchange methods in the beef cattle market are different in their “competing advantages”. The over the hook method is more oriented on long term co-operation between cattle producers and meat processors and therefore focussing on integrating benefits in the supply chain. On the contrary, AuctionsPlus is focussing on lowering transaction and communication costs. In this respect has been noted that the exchange methods differs too in their offered range of services in supporting the basic trade and trade context processes. The traditional exchanges methods are strongly based on a full service concept while AuctionsPlus has a more narrow service concept.

5. EM life determined by external competition and internal adaptation.

The case study shows a kind of competition between three exchange methods in the beef cattle market fighting for market share and critical mass. The “slow” adoption of AuctionsPlus can be explained by the fact that it was not capable to realise a enough “market share” and was therefore lacking resources to compete successfully as an independent intermediary in the beef cattle market. For this reason AuctionsPlus was taken over by a “competitor” in the beef cattle market, playing a key role in the traditional exchange methods sale yards auctions and over the hook. The adoption of EM could be explained on the short run by internal management action and on the long run by natural selection and competition between the variety in the population of exchange methods.

6. EM advantages by independent individual and interdependent network value.

The case study shows that AuctionPlus failed in getting critical mass and enough “market share” and therefore it could not generate enough interdependent network or community value. On the contrary, the traditional exchange methods tried to defend their “market share” in order to protect their existing physical and social capital investment in these methods. To summarise, the EM advantages are determined by the independent value strongly related to the individual users and interdependent value strongly related to the number of users.

3. General Perspectives in EM Theory

3.1 EM Framework: Four Views on Electronic Markets

The framework – outlined in figure 3- is classifying the major schools of thoughts in EM theory into four basic views based on the concept of Astley and Van de Ven (1983). This framework is based on two analytical dimensions: (1) the micro versus meso level of analysis and nature of change and (2) the relative emphasis placed on the deterministic versus voluntaristic assumption about human nature. They (1983, p. 247) argue that there is a classical duality between social determinism and free will; the views that human beings and their institutions are either determined by exogenous forces or are autonomously chosen and created by human beings. Seen from a voluntaristic, social orientation, individuals and their created institutions are autonomous, self-directing actors: individuals and stakeholders are considered as the basic unit of analysis and source of change in a life of an EM. The deterministic orientation focusses more on structural properties of the context within the individuals are acting and the individual behavior is considered as determined by and reacting to structural constraints. The discussion between the voluntaristic versus deterministic approaches is intertwined with the level of analysis that has been used. We can consider an EM -on a micro level- as a single organisational institute or -on a meso level- as a varied population of competing institutions. The assumption is that the populations exhibit distinctive properties and dynamics of their own and are not discernible in single organisations. These two views differ especially in their discontinuous, planned versus incremental, continuous change mode.

| Orientation Change Mode | Deterministic, Technical-Economical Orientation | Voluntaristic Social-Cultural Orientation |
|--|---|--|
| | Natural Selection View | Network Action View |
| Dynamic Conti-nuous Emer-gent Change, Meso Level | <u>EM Concept</u> Markets are path dependent institutions competing in facilitating exchange between groups of buyers and sellers <u>School of Thoughts</u> Institutional economics Dynamic markets <u>Change Mode</u> incremental, evolutionary, selection <u>Innovation Driver</u> Competitive advantages between a variety of exchange methods | <u>EM Concept</u> Markets are communities facilitating exchange between groups of buyers and sellers organized and socialized by mutual trust and adjustments <u>School of Thoughts</u> Network cluster concept Virtual organizations Social capital, community concept <u>Change Mode</u> Incremental, trust, mutual adjustment <u>Innovation Driver</u> Cooperative and innovative advantages of networks |
| | Coordination System View | Strategic Choice View |
| Compa-rative Static Disconti-nuous Planned Change, Micro Level | <u>EM Concept</u> Markets are transaction coordination mechanisms facilitating exchange between buyers and sellers <u>School of Thoughts</u> Transaction Cost approach <u>Change Mode</u> IT facility planning led <u>Innovation Driver</u> Lower transaction/communication costs | <u>EM Concept</u> Markets are institutions facilitating exchange between buyers and sellers by supporting processes organized by stakeholders with conflicting purposes and interests <u>School of Thoughts</u> Stakeholder framework Resource dependency concept <u>Change Mode</u> blueprinted strategic planning led <u>Innovation Driver</u> Integrating benefits supply chain |

Figure 1: Central Perspectives in EM Theory

3.2 Identification and Description of the Four Views and Their Schools of Thoughts

1. The coordination system view on micro level is dominated by a deterministic orientation of human self-interest and opportunism in the context of a faceless market. Humans are atomic elements and their behaviour is role based regulated by an invisible hand. The dominant school of thought is the micro economic oriented Transaction Cost Approach (Williamson, 1975) This school argues that the interactive IT capabilities reduce the cost of market co-ordination relative to internal co-ordination cost. The transaction costs are believed a function of (1) asset specificity, (2) transaction frequency, and (3) the uncertainty surrounding the transaction. According the co-ordination system view change takes the form of discontinuous adaptation, it occurs as the result of exogenous shift in the technical environment, the "reactive" manager has to perceive, process and respond to the changing environment and adapt by rearranging co-ordination systems.

2. The strategic choice view on micro level is dominated by a voluntaristic orientation on human behaviour in the context of a power constellation. According to this view, choice is available in the design of EM, which may be in line with interest of involved stakeholders. The dominant school of thought in this view is the process stakeholders framework (Kambil and van Heck, 1998). and the resource dependency approach (Pfeffer and Salancik, 1978). They state that organisations align their own interests with the interest of the stakeholders. Especially the resource dependency school of thought suggest that the pooling of resources owned by different stakeholders can be a reason to form an alliance for an EM (Baldi and Borgman, 2001). This view is dominated by the "proactive" manager notion, aligning the internal competences and the external changing conditions.

3. The natural selection view on meso level is dominated by the deterministic orientation of human behaviour in the context of competition and natural selection. This view emphasises, rather deterministically, that there are definite limits to the degree to which autonomous strategic choices is available. At the same time organisations are seen as limited in their competitive battle for survival through a direct confrontation with natural or exogenous environment. The ecological school of thought, suggested by Zmud (in a not documented key note speech in the 4th ICEC conference in Hong Kong) is not focussing any more on single EM institutions but on the structural characteristics of the total population of exchange methods. Based on a parallel with the industrial economist's notion of industrial structure we could put forward that EM institutions has to compete and survive in relative stable "market structures". Institutional economists such as such as Williamson (1975) and North (1990) and dynamic market theorist such as De Jong (1981) contend that industrial and market structures evolve in determinate ways. This view is dominated by the inactive manager with the market as an invisible hand and a "creative destruction" change mode.

4. The network action view on the meso level of EM is dominated by the more voluntaristic orientation of human behaviour on a meso level. The key notion in this view is there is a community of interacting individual members emphasising trust-based relations and social capital. This view is dominating in the network theory of Hakansson (1987), the concept of social capital and the third rationality of Kumar et al. (1998). Based on these concepts, markets are network or community of interdependent, yet semiautonomous actors that interact to construct or modify their collective environment, working rules, rules for knowledge exchange and options. This view can be characterised by an interactive manager model spanning the boundaries in the network.

Finally, all EM forms are affected by the overall institutional system, defined as the institutional arrangements as the rules of the game in a society or norms formally articulated the humanly devised constraints that shape human economic interaction and provide structure for everyday life. These can be formal constraints such as legal regulation or informal constraints such as culture.

4. Conclusions

The identified case study puzzles will be discussed against the background of the developed framework with four different views on EM.

1. EM as an economical rational system and social constructed community.

This puzzle can be explained by the duality between the deterministic, technical orientation versus the voluntaristic, social-cultural orientation underlying different school of thoughts in EM theory. It reflects the debate between the technical-economical oriented model of human and organisational behaviour, universally determined by opportunism and faceless markets versus a social-cultural oriented model of human and organisational behaviour based on individual choices, trust, altruism, and co-operation. In this respect, Kumar et al. (1998) distinguish the first economically oriented rationality exposed in the Transaction Cost Approach versus the social, trust based third rationality exposed in community concept of Steinfield et al. (1999) They argue that B2B research is dominated by the (global) efficiency related service concept and is lacking the attention for (local) social relationship building (social capital) as an important issue in the formation of stable business trading relationships.

2. EM adoption by stakeholder choices and trust based individual choice.

This puzzle can be explained by the duality between the micro economic orientation versus the meso economic orientation underlying the different school of thoughts in EM theory. This difference is reflected in the debate between two adoption decision types: individual choices versus autocratic, stake holder's adoption choices (Rogers, 1995). The process-stakeholder school of thought (Kambil and van Heck, 1998) suggests that stakeholders have the representative power to decide on behalf of the market community. On the contrary, Kuldeep et al. (1998) pointed out, based on the Merchant of Prato case, that -often economical- autocratic adoption decisions are not decisive but has to be confirmed by -often social-cultural- individual choices of the members in the community. Sometimes the trust based interactions in the network community are influencing the economic benefits strongly and are decisive for adoption or rejection of an innovation. We have to make a distinction between an autocratic decision to adopt an innovation and the diffusion and acceptance of this innovation by individuals choices.

3. EM development by blueprinted engineering and path dependent evolution

This puzzle, regarding discontinuous, planned change versus continuous, evolutionary change can be explained by the duality between micro economic, single organisation view versus a meso economical network view underlying the different schools of thought in EM theory. The difference is reflected in the debate between rational plan driven system engineering to achieve predefined goals versus market improvising driven, evolutionary change. (Ciborra, 1996) His concept of market improvisation, defined as situated performance where thinking and action seem to occur simultaneously and on the spur of the moment, is rooted in a bottom up, meso-oriented and deterministic view. In these views, EM development is a path dependent, evolutionary process what is

elaborated by e.g. Raisch (2001). On the contrary rational, plan driven change is more rooted in the stakeholders strategic choice view on micro organisational level and is based on the assumption that management has the capability of formulating and implementing predefined goals and blueprints for the future.

4. EM advantages by lower transaction cost and integrating benefits.

This puzzle can be explained by the duality between the micro economical transaction orientation versus the meso economical network orientation underlying the different schools of thought. The transaction cost economics, based micro economical oriented co-ordination systems view, is focussing on the existing the transaction cost and assumes that the production cost of the buyers and the sellers will stay constant. Network and community based school of thoughts are focussing more on collaboration in the supply chain resulting in integration and lower production costs resulting in co-operative benefits for the network partners (Christiaanse and Kumar, 2000)

5. EM life determined by external competition and internal adaptation.

This puzzle is strongly related to puzzle 3 and can be explained by the duality between the micro versus meso level orientation and between the deterministic and voluntaristic orientation. The process stakeholder framework, based on a strategic choice view assumes enough management "capacity" to face external (technical) forces. However the power of stakeholders can be limited by the "competitive market structure" like the beef market case shows. Even a governmental agency cannot deny these constraining structures. In addition the internal adaptation of an EM is constrained in the long run by external competition.

6. EM advantages by independent individual and interdependent network value.

This puzzle is rooted by the duality between the micro economic versus meso economic orientation of the different school of thoughts. The transaction cost economics, rooted in the co-ordination system view assumes implicitly only individual cost savings for the involved sellers and buyers. On the contrary, the network and virtual organisations concepts, rooted in the network action view recognise explicitly interdependent values rooted in network externalities (Katz and Shapiro, 1986). They occur if the benefits to adopt some type of innovation increase with the number of adopters, thus inducing increasing returns to adoption. In this respect, we have to distinguish supply chain integration based value rooted in a better co-ordination of the process of the seller and buyer and seller network interaction based value rooted in exchanging knowledge. At least we should address EM itself as an important third party influencing the distribution of benefits between the involved actors depending on appropriability regime and their ownership of complementary assets. (Teece, 1986).

Finally, we did not discuss the institutional system in detail, but it could be an important factor in adopting EM. The formal regulation and non business partners such as standard bodies, trade associations and government are influencing in a indirect way the net economic benefits and their distribution over the involved business partners. The informal cultural norms in the social system of the involved community are influencing the perception of the benefits as is illustration by the Australian beef market case. To conclude in general, the framework is helpful for theorists and practitioners in understanding EM practice by identifying and making explicit the underlying assumptions in the different schools of thoughts. It supports to relate the different schools of thoughts to each other and can be a theoretical foundation for a more integrated model of an EM.

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